

Enhancing the Implementation of E-Government in Indonesia through the High-Quality of Virtual Community and Knowledge Portal Design

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Abstract: The barriers faced by Indonesia are simply caused by the lack of basic requirements such as infrastructure, penetration of computer, policy, and regulation. Another essential barrier is the lack of e-leadership. This research treats creation of virtual community in order to overcome those barriers. The need of knowledge portal becomes essential to create a high quality of virtual environment. This research proposes the main concepts of e-Government and Knowledge Management, along with the implementation of both in an ideal environment for stakeholders to gain advantages of the reused knowledge. The proposed framework facilitates the process of gaining information through the community, thus the knowledge sharing and knowledge transfer would become more effective and the creation of new knowledge could be triggered.

Keywords: knowledge management, e-Government, virtual community, knowledge portal, and framework

1. Introduction

Indonesia is one of the largest countries in the world with large population which is separated by water and mountains. By the population of more than 220 millions and 17,000 islands, spread out along 5000 km length within 1.9 million square km of land, created a gap in the development of technology (ICT) and human resources between urban and rural areas, cities and villages. This gap is known as digital divide. The importance of building the information society aligned with international trends became the priority of the Government of Indonesia.

Economic turmoil followed by democratization on 1997 has changed the expectation of public on the Government of Indonesia. The public expected major change in the delivery of services and information. Good Governance and Democracy became the key points of the government policy in delivering public services.

On the other hand, Indonesia is in the transition process of transforming of Government system from the Centralized to the Local Autonomy based on Law No. 22 Year of 1999, Concerning Regional Government. It stated that the government system of the Unitary State of The Republic of Indonesia, by virtue of the 1945 Constitution, provides for regional Autonomy. The organization of regional autonomy is considered necessary to emphasize the principles of democracy, community participation, equitable distribution and justice, as well as to take into account the regions' potentials and diversity. The regional governments referred to here are governments of provinces, cities and districts (kabupatens) (Rose, 2005). These become the government task to assemble this entire piece of information to achieve Indonesian welfare society.

2 E-Government in Indonesia

Today, Indonesia is doing a program called Indonesia Government Online or e-Government through The Ministry of Communication and Information Technology (Kominfo). E-Government is defined as a way for governments to use the most innovative information and communication technologies, particularly web-based Internet applications, to provide citizens and businesses with more convenient access to government information and services, to improve the quality of the services and to provide greater opportunities to participate in democratic institutions and processes (Fang, 2002). This definition emphasizes building the relations between government and business, government and citizen, government and employee, and among different units and levels of government.

The aim of e-Government is to reduce the administrative hierarchies, simplify the administrative work, optimize the government business process, improve the quality of government service, enhance the

collaboration of the internal departments and the interactions between the (regional) government, and finally to achieve the information society through the effective and efficient communication and information services in the framework of The Unitary State of The Republic of Indonesia as the vision of e-Government in Indonesia (Kominfo, 2005).

2.1 Currents Condition

By the Law No. 22 Year of 1999 and the concept of e-Government, the Central governments responsible to make general policies related to the implementation of e-Government and the Regional government has privileges to determine how the implementation it seems to be.

Since almost 3 years of e-government implementation in Indonesia, the Regional governments facing problems in the development and the implementation of e-government. Although regional governments seem understanding about the demands of promoting good governance in their regions, apparently most still do not notice how important e-government is. They should be told continually that e-government would support their performance, as well as promoting good regional governance (Rose, 2005). Thus, there are a lot of e-Government project was stuck or even fail.

2.2 Obstacles

Eddowes stated that (Eddowes, 2004), according to the regional government respondents, the five greatest barriers to the adoption of e-Government, in order of frequency of response, were: Lack of technology, lack of financial resources, lack of technology or web expertise, lack of issues regarding security, and the need to upgrade existing information technology.

Nevertheless, those typical problems normally appear in the developed country such as Europe, Northern America, Australia, and Japan. In the developing especially Indonesia, the barriers to the adoptions of e-Government simply caused by lack of telecommunication infrastructure, penetration of computers and internet, policy and regulation, ICT literacy which is related to basic requirements for the implementation of e-Government. Another essential barrier is the lack of e-leadership. Many regional leaders didn't pay much attention on e-Government movement due to the problems they faced such as disasters, health, food, education, poverty, and other fundamental problems.

The barriers stated above are what exactly happened in Indonesia. There are a lot of unread emails, no discussion forums, unfinished websites, minim information about the regional features such as, regional expenses and expenditures, regional development strategies, natural resources, maps, regulations, and public resources. These are turned out mostly due to the lack of financial, and human resources.

2.3 Success Stories

On the other hand, there are some Regional Governments which are successful in the implementation of e-Government. The Regional Government of Kutai Timur and Gorontalo are two of the regions which have a success story (Rose, 2005). The success was indicated by the effortless of the bureaucracy about creating identity cards, building permits, and tax payments. Besides, the websites also provide a lot of information related to the region, such as the geographical condition, potential natural resources, workforce, industrial area, agricultural, tourism, regional statistics, public facilities, city plans, and government finance. The point is the sequence of public administration was shortened by implementing e-Government.

One of Indonesia's economic leading magazines, *Warta Ekonomi* did annual survey on e-government progress in Indonesia since 2002. The survey assesses the Front Office (website) and the Back Office (Government management) of Regional Government. The judges were taken from the *Warta Ekonomi* teams, the practitioners, and the experts on e-Government. On the 3rd survey on 2005, there are 12 states which have the best result. The result can be seen on Table 1.

Table 1. The winners of The 3rd e-Government Award 2004

| No | Kabupaten/Kota | Province | Department | Non Department |
|----|---|---|--|--|
| 1 | Kebumen www.kebumen.go.id | DI Yogyakarta www.pemda-diy.go.id | Dept. Kimpraswil www.kimpraswil.go.id | Bank Indonesia www.bi.go.id |
| 2 | Bogor www.kotabogor.go.id | Jawa Timur www.jatim.go.id | Dept. Dalam Negeri www.depdagri.go.id | Badan Pusat Statistik www.bps.go.id |
| 3 | Kutai Timur www.kutaitimur.go.id | Sulawesi Utara www.sulut.go.id | Dept. Pertanian www.deptan.go.id | Perpustakaan Nasional RI www.pnri.go.id |

Continuous improvement has been done by the Government, either Central Governments (Department of Kominfo) and Regional Governments (Cities and Kabupatens Governments). Some of success stories were shown following the improvement. So there is opportunity to improve the implementation of e-Government in Indonesia.

3 The overall technical framework of E-government

E-government has the potential to provide government information and services to the public. By increasing the availability of information and services and by making them available 24 hours a day and 7 days a week, e-government could raise public involvement across geographic, economic, and cultural boundaries.

Reference model of the overall technical framework of Indonesian E-government is shown as Fig. 1 (Inpres No. 3, 2003). The framework has four main pillars; Change Management, Policies, Rules, and Citizens needs. The framework also includes the entire national aspects which are the access layer, the public service portal layer, the information management organization layer, the infrastructure and basic application layer. The services are targeted mainly at business, citizen, government, and non profit parties.

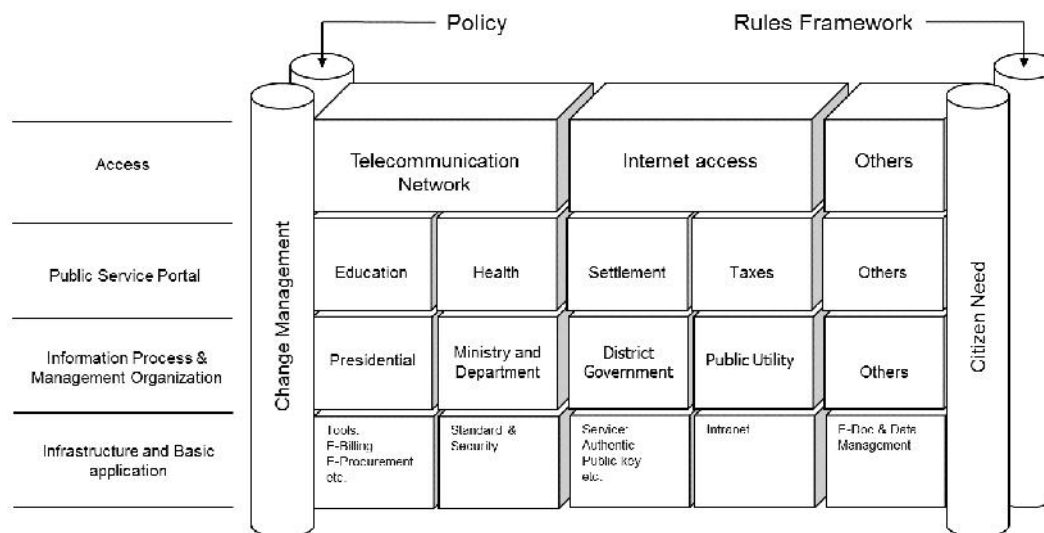


Fig.1. Architecture of e-Government Implementation of Indonesia (Inpres No. 3, 2003)

There are indications that e-Government has not been properly implemented by regional government. The regional government seems not really serious in developing and improving e-Government. Although regional Governments seem understanding about demands of promoting good governance in their regions, apparently most still do not notice how important e-Government is (Rose, 2005). According to those statements, this research tries to contribute strategy of e-Government Implementation in Indonesia by using Knowledge Management System.

4 Major Technical Tasks

According to Wagner (Wagner, et al, 2003), there are three widely used solutions regarding to the problem of e-Government Implementation. These alternative solutions offer some knowledge management capabilities, while avoiding the high cost of ownership associated with enterprise systems. There are:

1. Expert Directory is simply a directory which consists of catalogue about the staff member and their expertise.
2. Basic websites is a site on internet that contains information about the organization which is written in HTML format that can be easily produced and updated.
3. Virtual Communities is communities that exist in a cyber world, with relationships between community members which is supported by information and communication technology.

From those alternatives, virtual communities become the best choice regarding the condition of Indonesia which is already stated before. This is because virtual communities can effectively capture and record the knowledge of the experts which is spread in thousands islands, any time, anywhere. Afterward the new knowledge can quickly be generated in response to the needs of the community (Wagner, et al, 2003). To achieve a high quality of virtual community in Indonesia, it needs the supporting facilities. The presence of knowledge portal becomes essential to support the community. The purpose of the design knowledge portal is to disseminate and collaborating all knowledge in the community. The questions, critics, comments, opinions, and any incoming inputs should be maintained to give the best result which is useful to all stakeholders (governments, citizens, business, and non profit parties).

4.1 Virtual Community

Bieber, et al, 2002 stated that theoretically there are two types of virtual communities: professional societies and virtual educational communities. A professional society is a special kind of virtual community, in which members participate to better understand its domain and improve the way they perform community related tasks. The virtual community of a professional society may include non-members and organizations and often is many times larger than the professional society's membership. Virtual educational communities move beyond the common "push" mode of current distance learning systems to provide a truly interactive environment of mutual sharing and action learning. Professional societies and educational institutions have existing organizational infrastructures in place, and a mutuality of interests.

Virtual communities can be categorized along four key characteristics to motive, cardinality of interaction, source of content, and autonomy. These characteristics shape the operation and communication of virtual communities, as well as their suitability for knowledge management (Wagner, et al, 2003).

Recently, there are so many communities who meet only in cyber world. Those communities could be categorized as virtual community; because the members of the community separated geographically and don't meet physically. They just meet on the cyber media such as mailing list, internet groups, discussion forum or the specific forum which exclusively owned by the institution by chatting, exchange information's, even doing some transaction.

The Central and Regional government also have a virtual community. The common media they use are mailing list and discussion forum. The citizen also could send emails to the email address on the website to give any comments, criticisms, opinions, or questions. According to (Rose, 2005) even if e-mail addresses are provided, citizens sometimes are not able to send e-mail due to message failure or return. This weakness of service is tried to be solved by the institution.

The need of virtual communities becomes important regarding to improve the knowledge either individual knowledge or group one. The knowledge in government also can be improved by creating virtual community. One of the examples is the virtual community which is done by Jakarta Province. They have "Forum Warga" as a place to discuss any problems in Indonesia, especially in Jakarta.

4.2 Knowledge Portal Framework

A portal is a web based solution that brings it all together: business process, knowledge management systems, enterprise applications, analytics, department web sites, and web content. Portals make people more effective by giving them the exact information they need, based on their roles, in a rich business context, HOPE (HCL's Oracle Portals service for Enterprise). The knowledge portal is designed to transform unstructured information from the stakeholders into a competitive government asset.

There are a lot of researches in knowledge portal design such as (Kondratova and Goldfarb, 2004), (Lin, et al, 2003), (Morici, et al, 2003), and (Yin, et al, 2003), which are conducted in developed countries. However, the architecture is not suitable for the community in Indonesia in case of e-government. This is because Indonesia is a developing country which has so many unique problems. As stated before, Indonesia is still facing the fundamental barriers, so that the need of features constructing knowledge portal could be different.

The proposed knowledge portal architecture was designed for the communities who involved in Indonesian e-government. The aim of the portal is designing good learning environment for the virtual communities. This portal design is general frameworks which can be modified depend on the situation. The portal has three main external entities which are Digital Archives, Intranet Users, and Extranet Users. The interrelations of the entities are shown in Fig.2.

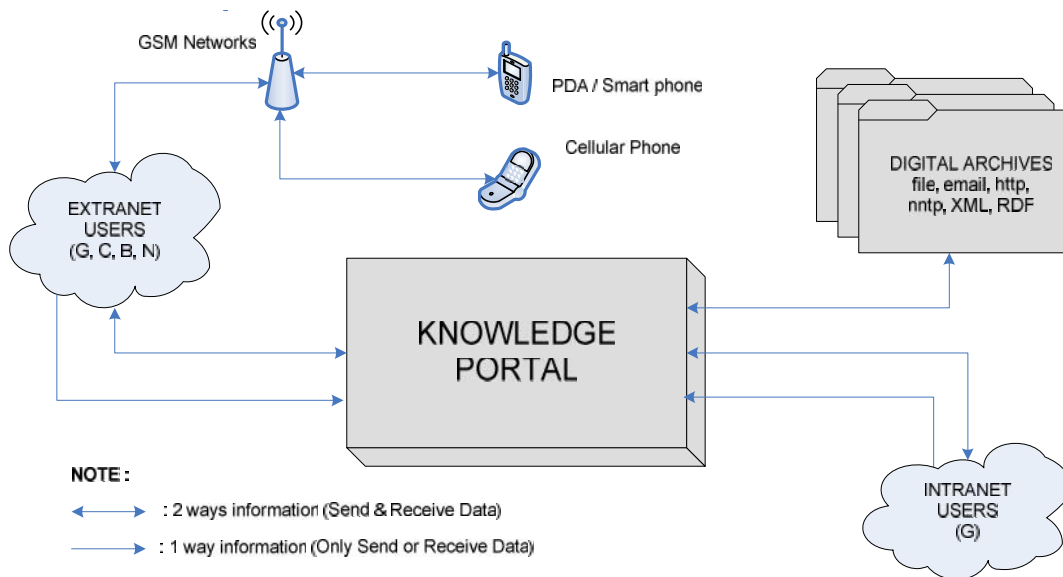


Fig.2. Knowledge portal and the external entities

The Digital Archives is any archive files in the internet and consist of every kind of data in any formats such as doc, xls, pdf, xml, http, nntp, and email. The Intranet and Extranet Users are separated because Extranet Users should pass the firewall to enter the Knowledge Portal, unlike the Intranet Users. The Intranet Users is the people working in government agency who use the intranet network. The Extranet Users is all the stakeholders involved in e-government like Business, Citizen, Employee, Non Profit parties, and Government itself. Access to the knowledge portal is accessible through various channels and formats. The principal interface is HTTP or HTML based, but access is also available from GSM networks through mobile devices such as PDAs, smart phones, and cellular phones.

The proposed model provides spaces for the virtual communities to interact each other. The portal has three main User Interfaces; e-Forum, e-Services, and e-Library. E-Forum provides space for Open Discussion, News group, Latest News. The forum should be designed as comfortable as it can, this becomes essential to create good environment for the virtual communities, thus the member can interact freely, enthusiastically, and actively.

To sharpen the depth and focus of the discussion, it is important to split the main topics into the specific ones, thus the member can choose the forum related to their needs. For example, the citizen who live in Jakarta can go to community of Forum Warga on the Jakarta website, they can choose the vital topic for instance the topic of Birds Influenza in Jakarta, the construction of Jakarta Outer Ring Road, the floods in Jakarta, or education. The business actors could also join the community of the ICT in Jakarta, the Cellular trend of Jakarta, the city plan about new International Trade Centre (ITC). The forum also could be completed by active link to the related topics either in digital library or other external links, with the intention that the member can enrich their knowledge. The presence of knowledge worker is also essential as a moderator of the discussion so that the discussion content could stay on track.

The other features provided by the portal are e-Service and e-Library. E-Service provides several government services such as tax payment, e-Learning, claims, fines, permits, registrations, licenses. The e-Library acts as an expert directory that provides articles, journals, documents, experience.

The three features in Knowledge Portal is intended to create good environment for the virtual communities, thus the member can interact freely, enthusiastically, and actively. Through the portal, the user could share both tacit and explicit knowledge which enhance the creation of new knowledge. The Knowledge Portal Framework is shown in Fig.3.

Through the User Interface, the incoming documents afterward were gathered, registered, and analyzed. Any incoming materials from the Extranet Users should pass the firewall system as the protection for the entire system. The documents are passed to the Middleware which generates corresponding SQL Statements through Java Beans file to retrieve relevant web pages or document from the repository (Yin et al, 2003).

The documents are written in XML (Extensible Markup Language) format in order to allow text analysis and indexing processes to cluster and categorize the document in the Knowledge Repository. This format was chosen because it provides a mechanism to impose constraints on the storage layout and logical structure. XML is heavily used as a format for document storage and processing, both online and offline. The features of XML that make it well suited for data transfer (Bray and Tim, 2005);

-) Its simultaneously human- and machine-readable format,
-) Its self-documenting format that describes structure and field names as well as specific values, and
-) Its strict syntax and parsing requirements that allow the necessary parsing algorithms to remain simple, efficient, and consistent.
-) Its robust, logically-verifiable format is based on international standards.

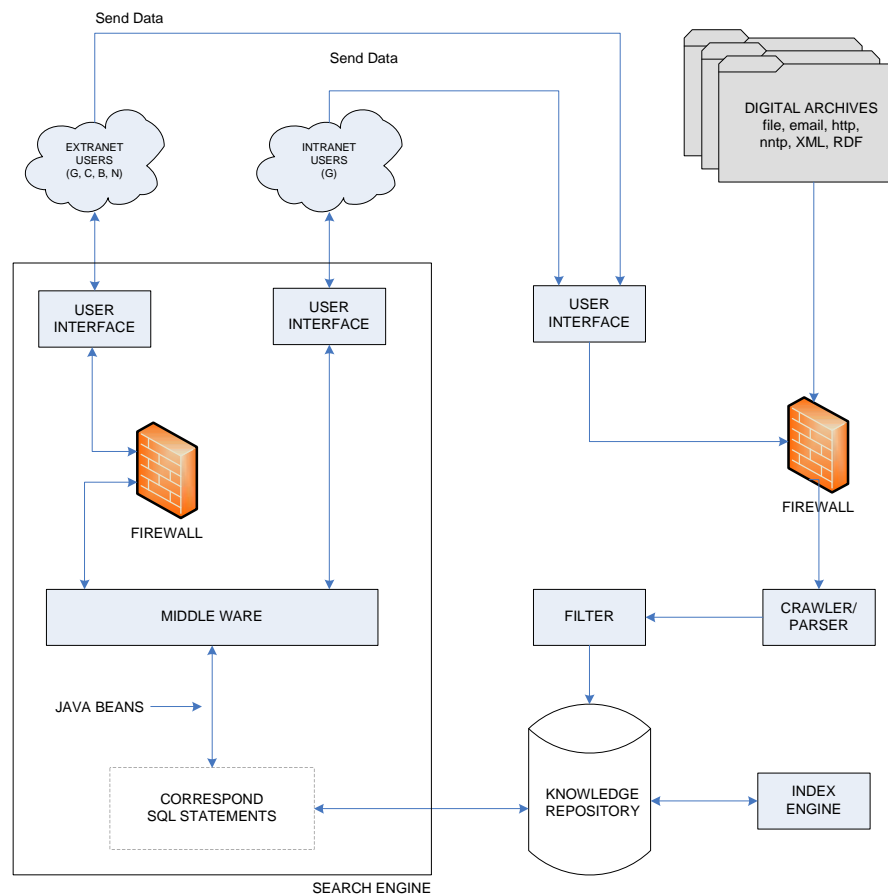


Fig. 3. Knowledge Portal Framework

The Crawler and Parser are used to grab any external documents either from the users or from the digital archives. The Crawler is modularized to handle different protocols such as HTTP, NNTP, POP3, IMAP, OAI-PMH, network file systems (LAN documents). The Parser deals with various formats of resources grabbed by the Crawler, such as HTML, XML, Office, PDF, E-Mail document resources (Yin et al., 2003).

From the Crawler/Parser section the documents are passed into Filter section. The incoming materials that come to this section were screened by the Knowledge workers. The members of knowledge workers consist of experts, nonprofit parties, public, business and the governments. Thus the forum could be as neutral as possible. The quality control should be done to guaranty the value of the information. Beside increasing the value of the portal assets, this process could be a "bottle neck" in getting information into the repository in a timely manner (Kondratova and Goldfarb, 2004). The repository design could be fulfilled by powerful technology application to minimize the human intervention so that the economical and sustainable system could be achieved. This research is still in progress.

5 Conclusion

The movement to e-government, at its heart, is changing the way people and businesses interact with government. A Good Governance will be achieved when the implementation of e-Government was success. One of the key factors of the accomplishment of e-Government implementation is the establishment of a smooth communication and information flows between the government and its related entities or stakeholders. The design of knowledge portal is one of the major tasks what should be done by the government to disseminate and collaborating all knowledge coming from the community.

Another way to improve the quality of the virtual community is by involving all the stakeholders in the creation of knowledge artifacts. Thus, the sense of belonging of the stakeholders will increase, and the knowledge creation could be done more effectively.

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